

fixed or portable, some for data-dominant traffic, others for voice-dominant traffic, and still others for the transmission of image-based traffic—all rather imperfectly stitched together.<sup>28</sup>

The transmission technologies vary in terms of their suitability and performance in carrying out these diverse transmission tasks. Moreover, telecommunications companies provide a wide array of additional switching services with different sets of switching and computer technologies. These switching and computer technologies also vary in terms of their cost and performance in the supply of various services. Also, there are different technological requirements for different portions of the telecommunications system. The technological requirements for transmission and for switching long-distance telecommunications differ considerably from those required for access to the telecommunications network. There are now multiple technological approaches for access to, as well as transmission of, local telephone service. As George Calhoun observes with respect to the large set of choices available simply for providing access:

So the real question faced by planners is not "Which is cheaper, radio or wire?" but "What is the most cost-effective mix of radio, cable, and fiber in the access network for a given situation?" The complexity of this question can overwhelm even a fully computerized modeling process. In principle, there are dozens, or hundreds, of solutions (in the mathematical sense of the word) for a given exchange. And when we realize that radio easily transcends the traditional exchange concept . . . , the solution set multiplies further.<sup>29</sup>

The natural monopoly argument becomes even less applicable when it is recognized that a telecommunications company can offer an array of telephone services, including basic voice transmission. The definition of natural monopoly, of course, may be extended to cover multiproduct technology. In the multiproduct case, the technology is said to have the natural monopoly property if a single firm can provide the bundle of products at a lower cost than can two or more firms. Under such conditions, the single firm enjoys economies of scope.<sup>30</sup> If distinct technologies are suitable for providing different products and services, such as voice, data transmission, interactive information services, and mobile communication, the argument that a single provider is optimal ceases to hold. Support for the natural monopoly argument

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28. *Id.* at 527.

29. *Id.* at 470.

30. See, e.g., SPULBER, *supra* note 4, at 114-17.

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would require satisfying a difficult, if not impossible, burden of proving that a single provider of many diverse technologies would be cost-efficient. The burden of proof becomes even more difficult when the technologies are applied to an ever widening array of different services.

In addition to the many telecommunications technologies handling many different functions, technology within any particular category can differ substantially across firms as a consequence of technological change. Firms have different production technologies because technological knowledge diffuses unevenly, and because technologies are embodied differently across different types of facilities and different generations of capital equipment.<sup>31</sup> With changing technology, therefore, costs can differ substantially across firms, and one cannot conclude a priori that a single firm can produce at lower costs than can two or more firms.

The natural monopoly argument that all technologies are known and that all firms have access to the best technology is no longer applicable as a description of local-exchange telecommunications. There has been substantial technological change in computers, computer based switching equipment, digital transmission methods, wireless access, fiber optics, and other key technologies since the MFJ was implemented. Thus, it is no longer possible to identify a stable best technology that can serve as the basis for the natural monopoly argument. Without such a basis, the natural monopoly argument cannot be used to establish the cost-efficiency of a single protected provider of service. For example, although fiber optics may have a clear advantage for some forms of trunkline transmission, there are a number of alternatives for handling connections to the network that continue to be developed.

Many crucial issues remain open, including the configuration of the access network and the standards for digital transmission in access. George Calhoun observes:

[T]he proper architecture for a digital access network is still very much in question. Star, ring or bus? Fiber to the home? Fiber to the curb? Radio tails? "Alternative access?" ISDN, or what? Moreover, regardless of which *physical* configuration prevails, the efficient digitalization of the access environment will require equipment based

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31. For example, Time Division Multiple Access (TDMA) and Code Division Multiple Access (CDMA) technology will enable providers of cellular service to offer what the customer wants: quality and the ability to call anyone, anytime. See CELLULAR TELECOMMUNICATIONS INDUS. ASS'N, STATE OF THE CELLULAR INDUSTRY 101 (1992). Different carriers utilize different technologies. "Among the top nine operators, six have said they favor CDMA. But . . . three operators [are] currently moving forward with TDMA . . . ." Karen O. Nielsen, *The Growing Pains of Cellular Services*, TELSCOM MARKET LETTER, Oct. 4, 1993, at 58.

on standards that are still under development or, at best, just beginning to be commercialized.<sup>32</sup>

If the best technology is not known, it cannot be asserted that an RBOC will necessarily have access to the best technology or that entry of new suppliers using alternative technologies cannot occur.

## 2. *The Connectivity of Networks Renders Natural Monopoly Obsolete*

The natural monopoly argument is also weakened by the connectivity of networks. Improvements in computers and related switching technology allow different firms to build and operate multiple networks that can then be interconnected.<sup>33</sup> The costs of interconnection have fallen substantially as the costs of switching technology have decreased. Open network architecture further reduces the benefits of a centrally switched network. In addition, new developments in switching have allowed customer premises equipment, such as the private branch exchange (PBX) and local area networks, to be substituted for transmission and switching by the telecommunications utility.<sup>34</sup> These significant developments render the concept of a natural monopoly telecommunications network obsolete.

## 3. *The Problem of Duplicative Facilities No Longer Applies*

At the heart of the natural monopoly argument lies the need to avoid duplication of facilities, particularly costly transmission facilities such as

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32. CALHOUN, *supra* note 27, at 534.

33. As former FCC chairman Alfred Sikes testified before Congress, "I do not believe that affording telephone companies expanded opportunities will result in a single network. Rather, I believe there will be satellite, mobile, broadcast, as well as cable and other distribution technologies. They will provide both independent and competitive transmission paths, and will often be linked together in a network of networks." *Communications Competitiveness and Infrastructure Modernization Act of 1991: Hearings on S. 1200 Before the Subcomm. on Communications of the Comm. on Commerce, Science and Transportation*, 102d Cong., 2d Sess. 16 (1992) (statement of Alfred C. Sikes). Mike Nelson, Special Assistant for Information Technology in the White House Office of Science and Technology Policy, sees phone and cable companies as "primary players" in developing what he calls the "network of networks," but notes that opportunities to participate will also present themselves to other communications and information technology vendors. *NII Board to Include Members of Satellite Industry; Advisory Committee on the National Information Infrastructure*, DEF. DAILY, Dec. 10, 1993, at 47. Tom Kalil, Director of Science and Technology for the National Economic Council, notes that "[p]eople assume we are automatically talking about wires, but they don't realize that we're also talking about wireless and broadcast satellites . . . that's why the phrase 'a network of networks' is so important. No one has in mind a monolithic, centrally designed platform for disseminating all the information." Kim McAvoy & Sean Scully, *Interagency Task Force Expected To Release Report Before End of Summer: National Information Infrastructure*, BROADCASTING & CABLE, July 5, 1993, at 26.

34. Note that Shared Tenant Services (STS) are the residential equivalent of the business PBX. STS "[p]rovid[es] centralized telecommunications services to tenants in a building or a complex." HARRY NEWTON, *NEWTON'S TELECOM DICTIONARY* 935 (1994).

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telecommunications lines. The advantage of having only one, as opposed to two or more producers, is that the single producer will create a single network, while two or more producers will create two or more networks, duplicating facilities and thus experiencing higher total costs. This crucial part of the natural monopoly argument has been rendered invalid.

Most importantly, the avoidance of duplication of networks is no longer an issue because duplication has already occurred. In many areas there are multiple networks employing fiber optic, cellular, and microwave techniques, and these networks essentially duplicate some transmission capabilities. "A technologically vibrant industry does not advance by 'duplication.' New technologies (integrated circuits, lasers), new media (radio instead of copper wire, fiber instead of microwave), new architectures (rings instead of stars), replace old ones."<sup>35</sup> The convergence of applications of alternative technologies suggests that the duplication problem no longer exists.

For example, a high proportion of households has both standard telephone service and cable telecommunications services.<sup>36</sup> In August 1993, it was estimated that over ninety-one million homes have cable service available.<sup>37</sup> The coaxial cable that delivers cable television is already capable of delivering telephone and other telecommunications services as well.<sup>38</sup> Cable companies, now allied with out-of-region telephone companies, are reportedly planning to spend fourteen billion dollars deploying fiber over the next decade.<sup>39</sup> According to former National Cable Television Association President James Mooney, "[t]he biggest telecommunications story of the decade may turn out to be not telcos' creating broadband networks, but cable technology and architecture proving to be the most efficient means of delivering the next

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35. PETER W. HUBER ET AL., *THE GEODESIC NETWORK II, 1993 REPORT ON COMPETITION IN THE TELEPHONE INDUSTRY* 2.80 (1992). The authors further observe: "Nor does competition arrive in a single leap. Instead it enters one market segment at a time, switch by switch, trunk by trunk, line by line, beginning where prices are highest and costs lowest." *Id.*

36. Cable operators are permitted to offer some types of telephone services. See *In re Application of Teleport Communications*—N. Y., 7 F.C.C.R. 5986, 5988 (1992) (permitting cable company to offer competitive access services in competition with New York Telephone); *In re Telephone Company-Cable Television Cross-Ownership Rules*, 7 F.C.C.R. 300, 322-23 (1991) (allowing cross-ownership between cable companies and interexchange telephone carriers); *In re Twintel Technologies, Inc.*, 5 F.C.C.R. 4547 (1990); Report & Order in Implementation of the Provisions of the Cable Communications Policy Act of 1984, 50 Fed. Reg. 18,637, 18,644 & n.34 (1985) (cable companies may offer cellular radio services); *ACLU v. FCC*, 823 F.2d 1554 (D.C. Cir. 1987) (upholding FCC determination that cable companies may offer cellular radio services) *cert. denied*, 485 U.S. 959 (1988).

37. NATIONAL CABLE TELEVISION ASS'N, *CABLE TELEVISION DEVELOPMENTS* (1994) (quoting estimate from PAUL KAGAN ASSOCS., INC., *MARKETING NEW MEDIA*, Dec. 20, 1993, at 4).

38. See SCIENTIFIC ATLANTA, *COACCESS: CATV TELEPHONE SYSTEM: A DUAL-SERVICE TELEPHONY/VIDEO SYSTEM FOR CATV NETWORKS* (1993). About three quarters of national cable installations were capable of two-way communications by the end of 1992. See NORTH AM. TELECOMMUNICATIONS ASS'N, *supra* note 5, at 134. According to the North American Telecommunications Association, "[T]he cable industry . . . already has in place most of the plant and infrastructure to compete head-on with local telcos." *Id.*

39. NORTH AM. TELECOMMUNICATIONS ASS'N, *supra* note 5, at 134.

generation of communications services."<sup>40</sup> Alliances between telephone and cable companies are extending these capabilities.<sup>41</sup>

Moreover, in most cities a number of alternative ways to access the network exist in addition to the LEC's local loop. These alternatives include two cellular carriers and fiber-optic connections supplied by competitive access providers (CAPs). There is rapid growth in cellular communications.<sup>42</sup> Furthermore, forecasts suggest that personal communications services (PCS) will have over eighty million subscribers by 1997 and 145 million five years later.<sup>43</sup> Therefore, the view that technology confers an inherent advantage on an incumbent RBOC, thus giving it a natural monopoly, is controverted by the fact that multiple local networks are already in operation.

The desire to avoid duplication of costly transmission facilities is also inconsistent with the technological changes involving wireless technologies. Even if wire-based transmission technologies exhibit the natural monopoly property, segments of the local loop are being replaced with wireless technol-

40. *Politics Also Mentioned*, CONRAD, DAILY, May 5, 1992, at 4. At a recent National Cable Television Association convention, cable industry representatives declared their intention "to take on the telephone industry . . . ." *Id.*

41. For example, two RBOCs are already poised to offer out-of-region local phone service over cable television lines. Time Warner/US West will provide full-featured local phone service over its cable television network in Rochester, New York by the beginning of 1996, in direct competition with Rochester Telephone. See Eric Paulik, *Sony Tuned for Last Expensive Phone Rates*, NETWORK WORLD, Aug. 22, 1994, at 30. Pending state regulatory approval, SBC Media Ventures (a subsidiary of SBC Communications, formerly Southwestern Bell) will offer phone service over its cable television network in 1995, in Montgomery County, Maryland in direct competition with Bell Atlantic. Southwestern Bell Seeks Md. PSC Approval for Cable Telephone, COMSOLON CABLE WK., May 30, 1994, available in WESTLAW, MAGNUS LIBRARY, 1994 WL 2312223; *States Menander Toward Rules to Foster C/P Competition*, TELCO BUS. REP., July 5, 1994 (hereinafter *States Menander*); Southwestern Bell purchased 100% of Ebasco Cable. Paul Furl, *Southwestern Bell to Buy Arlington, Montgomery Cable*, WASH. POST, Feb. 10, 1993, at C1. U S West paid \$2.5 billion for a 25% stake in Time Warner. Jonathan Roberts & Laura Lando, *US West and Time Warner to Form Strategic Alliance: Baby Bell to Pay \$2.5 Billion for Stake and a Partner in Technology Footnote*, WALL ST. J., May 17, 1993, at A3; BellSouth acquired 22.5% of Prime Management, which operates Prime Cable. John Greenwald, *Wire! Bell Atlantic's Bid for Cable Giant TCI is the Biggest Media Deal in History; It's Also a Peek at the Future*, TIME, Oct. 25, 1993, at 50. NYNEX invested \$1.2 billion in Vicon. Jonathan Roberts, *Vicon to Get \$1.2 Billion from Nynex*, WALL ST. J., Oct. 5, 1993, at A3. Bell Canada paid \$400 million for 30% of Jones Interchange with an option to gain a controlling interest within the next eight years. Christopher Chupello, *Corporate Focus: BCE Focuses Premiums and Perils of Telecommunications: With Jones Deal, Company Bets on Interlocking Cable*, PHOENIX, MELBURN, WALL ST. J., Dec. 6, 1993, at B4; Edmund Andrews, *Company News: BCE to Buy 30% of Jones Interchange*, N.Y. TIMES, Dec. 4, 1993, at 1, 39. MCI has recently announced a joint experiment with Jones Interchange to use phone service over its Jones cable network in Alexandria, Virginia. MCI, *Jones Phone Home*, VALLEY, Dec. 6, 1993, at 20. MCI and Jones Interchange, along with Bell Canada, are conducting a trial of voice services in Chicago. *Telephone Services to Be Tested over Cable TV System*, TELECOM. REP., Nov. 29, 1993, at 10-11.

42. The market for cellular communications grew from thirteen million subscribers as of mid-1993, according to a Cellular Telecommunications Industry Association press release from October 1993, to over thirteen million subscribers as of mid-1994. Over 17,000 new customers are reported to subscribe each day. *Cellular Phone Subscribers Top 19 Million Mark*, REUTERS BUS. REP., Sept. 5, 1994, available in LEXIS, News Library, Wire File.

43. *Mobileservice PCS Use is Expected to Be Key Element Driving Demand for New Mobile Services*, According to Survey by Telecom, CONRAD, DAILY, Oct. 1, 1993, at 5.

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ogies, many of which may not exhibit natural monopoly characteristics. Competitive entry can and indeed has occurred. Competing firms are serving the telecommunications market with wireless technologies such as cellular, microwave, and satellite systems. Additional competitive entry in the form of personal communications services will follow.

Moreover, the substitution of low cost switching technology for transmission further reduces the need for concern over the duplication of transmission facilities. Substantial portions of the network can be replaced by equipment on customer premises, including customer-owned switching, such as private branch exchanges, and customer-owned transmission facilities. The amount of duplication required by competing networks is substantially reduced, thus lowering the cost advantage of a single producer over two or more producers.

### D. *Natural Monopoly Technology Is Not a Barrier to Entry*

By itself, a natural monopoly technology does not act as a barrier to entry.<sup>44</sup> Firms can enter an industry and compete with incumbents even if production by a single firm is efficient. Natural monopoly technology does not prevent the entrant from investing in new facilities, announcing prices, recruiting customers, and otherwise competing with the incumbent. To effectively deter entry, the incumbent firm must be able to set prices and retain its customers such that entry is no longer profitable. It is important to emphasize that, even if a single firm could serve the market more efficiently than could two or more firms, this state of affairs does not imply that entering firms cannot compete to serve the market. Furthermore, natural monopoly technology does not rule out the possibility of multiple competitors entering to serve the market simultaneously.

#### 1. *Natural Monopoly Does Not Preclude Competition to Serve the Market*

By itself, natural monopoly technology does not prevent firms from competing to serve a particular market. Along with other economic analyses of entry and competition, the economic literature on contestable markets has shown that competition for the market can occur with natural monopoly technology, and it has stated the conditions under which there may or may not be prices such that an incumbent can sustain a monopoly position.<sup>45</sup> Under

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44. Whether or not the local exchange exhibits barriers to entry regardless of natural monopoly is the subject of Part II.

45. See BAUMOL ET AL., *supra* note 18, at 7. The authors refer to an industry in which there are negligible barriers to entry as "contestable" and point out that companies that are natural monopolies

certain demand and cost conditions, an incumbent can sustain its position against new entry, but only by choosing prices that yield zero profits.

Even under the very specific demand and cost conditions sufficient for "sustainable" monopoly prices, the possibility of sustainable prices need not prevent entrants from successfully competing for the market if the incumbent were to deviate from those prices. Even if these conditions were to hold, therefore, an incumbent firm could not leverage its monopoly position to favor other lines of business, because this action would create opportunities for new entrants to serve customers by not requiring the purchase of additional services. In addition, the monopolist could not generate profits to subsidize entry into other lines of business, because the potential for entry into a contestable market eliminates both profits and cross-subsidies.

For purposes of argument, however, suppose that the production technology of the local exchange were to exhibit the property of natural monopoly, contrary to the hypothesis of this Article. This does not imply that the LEC could select prices that would deter entry. The existence of multiple technologies, the ongoing development of new technologies, and the differences in information that firms have about the technology create opportunities for the entry of competitors. Therefore, an incumbent could not sustain a monopoly position simply through the selection of prices. Given the technological change that has been occurring in the telecommunications industry since the MFJ, the incumbent cannot be expected to sustain a monopoly position. The entry of new carriers providing alternative access and transmission services that are economic substitutes for the services of the RBOCs clearly demonstrates that a monopoly over the local loop is not sustainable.

## 2. *The Natural Monopoly Argument Does Not Apply with Cost Inefficiencies*

A firm cannot enjoy the cost advantages of natural monopoly unless the firm utilizes its production technology at the efficient frontier. This means that, given a particular productive technology, the monopoly provider purchases and employs productive inputs efficiently to minimize costs. If this is not the case, then a firm operating in the market is subject to competition from more efficient entrants. Thus, the natural monopoly properties of the technology are not sufficient by any means to guarantee that an incumbent can secure a monopoly position. If the incumbent firm is not operating efficiently, a more efficient entrant can provide equal or better service to customers at a lower price.

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can compete to serve the market.

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A number of reasons, including the presence of regulation, suggest that incumbents in telecommunications are not utilizing their technology in the most economically efficient manner. If investment incentives are distorted, the technology will not be operated at the efficient frontier. A number of factors indicate that the investment level of the local telecommunications providers should not be presumed to be at an efficient level. Price regulations, the entry of competing carriers, the line-of-business restrictions, and regulatory uncertainty will affect the incentives of a local telecommunications company to invest. To the extent that investment departs from efficient levels, the notion that natural monopoly technology prevents entry ceases to apply.

### 3. *The Existence of Multiple Carriers Calls into Question the Natural Monopoly Argument*

The argument that the technology of the local exchange exhibits natural monopoly properties, and thereby confers a monopoly on the local exchange, is refuted if competitive entry successfully occurs. The presence of competitors in the local exchange leads to one of two conclusions. First, if natural monopoly technology is sufficient to create a monopoly, then the entry of competitors must imply either that the LEC technology is not that of a natural monopoly, or that the LEC is not operating the natural monopoly technology efficiently or pricing appropriately. Second, even if we believe that the LEC technology were that of a natural monopoly, we would be forced to conclude that natural monopoly technology was insufficient to guarantee that an incumbent could achieve a monopoly in the market as a result of its technology. Either way the natural monopoly argument for regulation of the local exchange ceases to hold.

Indeed, there are competing multiple carriers in the local exchange.<sup>46</sup> Cable systems are already in place and available for competition in telephone service. Interexchange carriers such as AT&T, MCI, and Sprint provide, in addition to transmission from one local access and transport area (LATA) to another (interLATA service), some intraLATA service in competition with the RBOCs. In January 1994, MCI announced that it planned to upgrade its network in order to compete against the RBOCs in providing local access.<sup>47</sup> In 1993, AT&T announced its intention to acquire McCaw, the largest cellular

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46. It might be argued that this does not refute the view that natural monopoly is not a barrier to entry if the incumbent RBOCs are handicapped by regulatory restrictions. The restrictions then provide protection to unregulated competitors and effectively subsidize entry. However, if the natural monopoly view were correct, one would expect the entry of at most one other carrier taking advantage of regulatory restrictions and employing the natural monopoly technology. This is refuted by the fact that multiple companies are entering the local exchange.

47. John J. Keller, *MCI Proposes a \$20 Billion Capital Project*, WALL ST. J., Jan. 5, 1994, at A3.



carrier in the United States, which could eventually enable AT&T to bypass the RBOCs in reaching the end user.<sup>48</sup> Dozens of CAPs, such as Teleport Communications and Metropolitan Fiber Systems, provide fiber-optic transmission service and connection to interexchange carriers.<sup>49</sup> Many companies provide wireless transmission service, including cellular telecommunications networks.<sup>50</sup> PCS will emerge as a new and significant form of radio communications upon completion of the Federal Communications Commission's auctions for narrowband and broadband PCS licenses.<sup>51</sup> The FCC anticipates that "the advent of PCS will open the commercial mobile radio services marketplace, which includes cellular service, to intense competition."<sup>52</sup>

The entry of competitors into the local loop has shown that there are no technological properties inherent to the local exchange that are sufficient to

48. See WILLIAM J. BAUMOL & J. GREGORY SIDAK, TOWARD COMPETITION IN LOCAL TELEPHONY 16 (1994).

49. CONNECTICUT RESEARCH, 1994 LOCAL TELECOMMUNICATIONS COMPETITION VI-1 (1994). According to a survey by the Yankee Group, only about half of all virtual private network customers opt for access through their local telco rather than using direct dedicated links to the interexchange carrier. Ellis Booker, *Virtual Network Equals Savings*, COMPUTERWORLD, Mar. 5, 1990, at 51. See also Bob Wallace, *John Hancock Completes Cutover from WATS to SDN; Change Expected to Save Firm \$1.2M Annually*, NETWORK WORLD, Aug. 27, 1990, at 2; Bob Wallace, *Firm Installs SDN, Waits on Tariff 12*, NETWORK WORLD, Sept. 4, 1989, at 1; John Dix, *Communications Options: The World Beyond AT&T*, COMPUTERWORLD, Dec. 30, 1985-Jan. 6, 1986, at 33.

The U.S. cities and regions served by CAPs contain the headquarters of over sixty percent of the companies that appear on the *Communications Week* list of the top 100 purchasers of telecommunications products and services. Anita Marks, *Electric Lightwave Readies Expansion Worth \$120 Million*, BUS. J. PORTLAND, Mar. 1, 1993, § 1, at 1; Penmi Crabtree, *Bell Tolls for PacBell Monopoly as Teleport Moves In*, SAN DIEGO BUS. J., Feb. 8, 1993, § 1, at 1; Christine Huggins-Bonsfield, *Big Spenders, Wise Spenders—Top 100 List Names Largest Communications Spenders, While Strategic Mission Awards Honor Some of Industry's Most Innovative Spenders*, COMM. WK., May 18, 1992, at 44-45.

50. There are nineteen million cellular subscribers comprising twelve percent of all wireline and wireless access lines. *Cellular Phone Subscribers Top 19 Million Mark*, supra note 43; FEDERAL COMMUNICATIONS COMM'N, STATISTICS OF COMMUNICATIONS COMMON CARRIERS 57 (1992/1993) (140 million wireline access lines).

51. According to *Business Week*, "The wireless boom that began with cellular phone systems has accelerated as new technologies emerge," including cellular, PCS, specialized mobile radio, and satellite-based systems. *Business Week* reports a prediction of Arthur D. Little that the market in the U.S. will triple from \$14 billion to \$45 billion by 2002 as the number of wireless callers increases from forty million to ninety million. *It's a Mad, Mad, Mad, Mad Wireless World*, BUS. WK., Nov. 29, 1993, at 128, 132. The GTE Corporation expects "total wireless voice services—including both Cellular and PCS—to reach some 30% of the population" by the year 2005, representing a market penetration of approximately 70 percent of U.S. households. Prepared Remarks of Dr. C.J. Waylan, Executive Vice President Marketing and Business Development, GTE Personal Communications Services, In the Matter of Amendment of the Commission's Rules to Establish New Personal Communications Services, Gen. Dkt. No. 90-314 (F.C.C. Apr. 11, 1994) (en banc). See also Peter Cramton, *Money Out of Thin Air: The Nationwide Narrowband PCS Auction*, J. ECON. & MGMT. STRATEGY (forthcoming 1995).

52. In re Applications of Craig O. McCaw & AT&T for the Consent to Transfer, File No. ENF-93-44, § 40 (F.C.C. Sept. 19, 1994) (Memorandum Opinion and Order) (footnotes omitted). FCC states that "The introduction of broadband PCS should benefit consumers by raising the overall level of competition in many already competitive segments of the telecommunications industry and by providing competition in other segments for the first time." In re Implementation of Section 309(j) of the Communications Act—Competitive Bidding, Fifth Report and Order 3 (F.C.C. June 29, 1994).

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guarantee a monopoly to the incumbent LECs. Such competitive entry implies that the natural monopoly argument should not be used to justify forbidding entry by the RBOCs into other lines of business.

### II. The Barriers to Entry Argument

The second argument used to justify the MFJ's line-of-business restrictions is that there are barriers to entry in the local exchange that will maintain the monopoly position of the RBOCs. Judge Greene, for example, has stated that "duplication of the ubiquitous local exchange networks would require an enormous and prohibitive capital investment."<sup>53</sup> This Section defines barriers to entry and examines whether they are present in local exchange markets. The Section demonstrates that the sunk cost argument for regulation of the local loop no longer applies and that entrants have already sunk costs for multiple networks.

#### A. The Definition of Barriers to Entry

Barriers to entry are costs imposed on entrants but not present for incumbents.<sup>54</sup> There are two main types of barriers to entry: sunk costs and government regulation.<sup>55</sup> Sunk costs are said to be a barrier to entry if entrants must make irreversible investments in capacity, expenses which incumbents have already incurred. Government regulation that takes the form of rules applying unequally to incumbents and entrants can create additional costs for entrants, potentially restricting market entry entirely.<sup>56</sup>

If an incumbent, but not an entrant, has already incurred the sunk cost of facilities, the incumbent need only price to recover operating expenses and incremental capital expenditures, since the irreversible investment costs of entry can be written off. A potential entrant, in contrast, must anticipate earnings exceeding its operating costs, incremental investment and irreversible costs of establishing its facilities, before it will attempt to enter the market.

The need to sink costs is not necessarily an insurmountable barrier to the entry of new competitors. All competitive markets involve some degree of irreversible investment, whether in capital equipment, marketing, or research and development. Entrants commit capital resources in markets where they

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53. *United States v. Western Elec. Co.*, 673 F. Supp. 525, 538 (D.D.C. 1987), *aff'd*, 894 F.2d 1387 (D.C. Cir. 1990).

54. This definition of entry barriers is due to GEORGE J. STIGLER, *THE ORGANIZATION OF INDUSTRY* 67 (1968). The definition is commonly applied. See, e.g., William J. Baumol & Robert D. Willig, *Fixed Costs, Sunk Costs, Entry Barriers and Sustainability of Monopoly*, 96 Q. J. ECON. 405, 408 (1981).

55. For additional discussion of barriers to entry, see SPULBER, *supra* note 4, at 40-42.

56. Licenses are referred to as "absolute barriers to entry" in STIGLER, *supra* note 54, at 123-5.

expect to earn competitive returns on their investments. The sunk costs involved in establishing a telecommunications system, given currently available technologies, are not qualitatively different from irreversible investments in any other competitive market. Furthermore, in competitive markets there is often duplication of investment, and the entry of excess or insufficient capacity can take place as a consequence of uncertainty regarding costs, technology, or market demand. Therefore, even if sunk costs are present in telecommunications, they need not in themselves confer monopoly rents on incumbents.

In addition, entrants can reduce the risk associated with making investment commitments in a variety of ways, including contracting with customers before irreversible investments are made and entering into joint ventures or mergers with incumbents. Moreover, a potential entrant need not be deterred from entry if it has a sufficient cost advantage over the incumbent. The developments in the industry since the MFJ amply demonstrate that many companies are willing and able to make the irreversible investments required to enter the business of local telecommunications.

#### B. *Barriers to Entry and the Local Exchange*

There is no question that the RBOCs have a predominant market share, and that these companies are large in terms of various measures of size, including number of customers and miles of transmission lines. These facts, however, need not indicate that the RBOCs have market power in the local exchange. An incumbent firm is subject to the competitive discipline of potential entry when its market power is not substantial. As Judge Greene stated regarding AT&T: "Although monopoly power may be inferred from a firm's predominant market share, size alone is not synonymous with market power, particularly where entry barriers are not substantial."<sup>57</sup>

While this Article notes above that both sunk costs and government regulation are sources of barriers to entry, sunk costs are the barrier to entry primarily associated with the local exchange. According to Greene:

Local exchange competition has failed to develop, not so much because state and local regulators prohibit entry into the market by would-be competitors of the Regional Companies, but because of the economic and technological infeasibility of alternative local distribution technologies.<sup>58</sup>

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57. *United States v. American Tel. & Tel. Co.*, 552 F. Supp. 131 (D.D.C. 1982), *aff'd sub nom. Maryland v. United States*, 460 U.S. 1001 (1983).

58. *United States v. Western Elec. Co.*, 673 F. Supp. 525, 537-538 (D.D.C. 1987), *aff'd*, 894 F.2d 1387 (D.C. Cir. 1990).

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Based on an examination of the telecommunications industry, this Article concludes that because of technological change, barriers to entry due to sunk costs are not at present a significant deterrent to entry into the local exchange. Moreover, the question of whether sunk costs are a barrier to entry is essentially moot because substantial competitive entry into the local telecommunications market has already occurred.

In addition, an examination of federal and state regulation of the telecommunications industry suggests that such regulation does not represent barriers to entry into the local exchange. In many markets, the RBOCs in fact face incumbent burdens, in which regulation imposes greater costs on incumbents than on entrants, thereby encouraging, or even subsidizing some forms of entry, and creating the potential for uneconomic bypass.<sup>59</sup> Uneconomic bypass occurs when competitive entry raises the total industry costs of providing a given level of service. It can result from subsidies or differences in regulation between incumbents and entrants.<sup>60</sup>

### C. *The Sunk Cost Argument for Regulation of the Local Loop No Longer Applies*

The evolution of telecommunications technology invalidates the argument that there are barriers to entry into local telecommunications markets stemming from the high sunk costs of establishing a telecommunications network. The notion that there are prohibitive capital requirements in duplicating the local exchange network rests on several economic and technological misconceptions.

First, a new entrant need not duplicate the RBOCs' entire transmission and switching systems to enter the market profitably. The entrant need only enter portions of the market where the expected revenues exceed the expected costs of providing new service. Thus, an entrant must sink the costs required to serve only its specific customers. The size of the incumbent's sunk costs is irrelevant to the entrant. By choosing to serve only part of the local exchange market, the entrant's irreversible investment is substantially reduced.

Second, the entrant need not duplicate the technology of the incumbent RBOCs' transmission and switching systems. The technology of telecommunications transmission has changed substantially in a manner that alters the types of investment required to establish a network. While transmission wires represent the primary irreversible investment incurred by the LECs, many new technologies, such as cellular, mobile radio technology, and satellite transmission, substantially reduce the wired portion of the transmission system.

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59. The term "incumbent burdens" was introduced in Paul W. MacAvoy et al., *Is Competitive Entry Free?: Bypass and Partial Deregulation in Natural Gas Markets*, 6 YALE J. ON REG. 209, 210 (1989).

60. *Id.*

By serving areas using wireless transmission, particularly for the "last mile" to the customer's location, the new technologies are not tied to specific customers through irreversible investment in transmission. For example, a transmission tower and receiver are not customer-specific since they can serve any customers in a given geographic area. Moreover, radio transmission facilities themselves do not necessarily represent sunk costs, since they can be physically moved to serve other markets. These features of some of the new transmission technologies eliminate the need for significant transaction-specific or customer-specific investments.

Third, technological change has altered the design of telecommunications systems. Telecommunications systems provide transmission services using a combination of switches and transmission. The increased power and reduced cost of computer chips have correspondingly increased the power and reduced the cost of switches. To the extent that switches can be substituted for transmission lines, the cost-minimizing input mix will involve a greater reliance on switches and a correspondingly lesser reliance on lines. Also, as the power of switches has increased, so has their productivity. Increased productivity of switches allows a reduction in the number of switches required to produce a given level of transmission capacity. For example, the private branch exchange switching technology allows a reduction in the number of lines required to provide a given level of capacity to a customer's premises.

A reduction in the number of lines required to provide a given level of capacity implies that this potential source of sunk costs is reduced for a new entrant into the local telecommunications market. Moreover, the switches operated by a telecommunications company, unlike lines, are not tied to a particular customer location. The switches may be shifted to other applications, and thus do not represent sunk costs. Also, the switches owned and operated by customers certainly do not represent sunk costs for a telecommunications supplier. Thus, as technological change has significantly reduced sunk costs, the argument that sunk costs create a barrier to entry into the local exchange ceases to apply.

There is another important way in which technological change in telecommunications has eliminated the argument that sunk costs are a barrier to entry. Given the extent of technological change since the time that the incumbent has installed its infrastructure for the local loop, the incumbent's technology and the entrant's technology differs substantially. The incumbent operates an old technology, such as a network that uses copper wires for transmission, whereas the entrant operates a new technology, such as one using more efficient radio or fiber-optic transmission.

The barrier to entry argument is then invalid with respect to local telecommunications in two ways. First, the operating cost differences between existing and new technologies can be substantial. The fact that the incumbent

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has sunk costs does not deter entry, because the entrant offering a more efficient technology, such as radio or fiber-optic transmission, can expect to compete successfully with the incumbent and recover sunk costs.

Second, the need to sink costs is not a barrier to entry if the entrant can invest in a new technology with a performance advantage over obsolescent telecommunications technology. The performance characteristics of incumbent and entrant technologies differ substantially. New access technologies offer various benefits that are not available through copper-wire access technology in the local loop. These benefits include the mobility of radio services, the increased bandwidth of fiber-optic services, and the television transmission capabilities of coaxial cable. If the incremental revenues that can be obtained from the provision of value-added services, such as mobility or data transmission, will be sufficient to cover the costs of establishing and operating a new system, then it is irrelevant to the prospective entrant that the RBOC has an advantage via its existing copper wire and other investments in the local loop.

The existing and planned competitive entry into local telecommunications show that the new technologies offer cost and performance advantages over existing technologies. It follows that these advantages are sufficient to eliminate the barriers to entry that arise from the facilities of the incumbent RBOCs and the need for new entrants to sink costs. Of course, the RBOCs can invest in the new technologies as readily as can any entrant, absent any regulatory hurdles. However, the incumbent and the entrants are then on an equal footing. The need to sink costs in a new technology falls evenly on the incumbent and entrant and thus cannot constitute a barrier to entry.

### *D. Entry Barriers Are Not an Issue Because Costs Have Already Been Sunk for Multiple Networks*

The argument that sunk costs constitute a substantial barrier to entry into the local exchange is also rendered invalid by the substantial entry into local telecommunications that has already occurred.<sup>61</sup> As this Article has already noted, there has been significant investment in local telecommunications capacity by long-distance companies, dozens of competitive access providers,

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61. At least twenty-three states have certified one or more local competitors. Connecticut, Washington, Connecticut, Maryland, Massachusetts, Michigan and New York have authorized switched local telephone competition. Illinois permits competition for some switched services and several other states are considering the issue. *States Meander*, *supra* note 41. Although most CAPs target business areas, these networks can be extended to serve residential areas. *CAP Visions Diverge in Face of Market, Regulatory Changes*, TELCO COMPETITION REP., May 12, 1994, at 1. For example, MCI Metro has announced that it "intend[s] to serve everybody." *MCI Metro Asks for Authority to Offer Switched Local Services in Five States*, TELCO COMPETITION REP., Oct. 13, 1994, at 2.

cable companies, cellular companies, and other wireless transmission suppliers.<sup>62</sup> The entry of new telecommunications companies in the local loop conclusively establishes that sunk costs do not create a barrier to entry in the local exchange markets that would be sufficient to confer a monopoly on the RBOCs.

In addition, the significant entry that has already occurred implies that new entrants do not necessarily have a cost disadvantage relative to incumbent RBOCs, for those new entrants have already made irreversible investments. After their irreversible investments have been made, entrants become incumbents. From that point forward, the costs of entry cannot be used to distinguish RBOCs from new communications providers. Moreover, there is considerable evidence of the existence of excess capacity in the local exchange markets, particularly in fiber-optic capacity, which suggests that the additional capacity created by new carriers will result in intense price competition with the RBOCs.<sup>63</sup>

*E. Regulation of the RBOCs Creates Incumbent Burdens Rather Than Entry Barriers*

Another form of entry barrier is created when a regulator awards an exclusive franchise to a LEC, thus precluding the entry of new carriers. However, the view that such a grant of statutory monopoly over local telecommunications is common today is incorrect. Although entry into the local exchange was once tightly regulated, it is not any longer. Here again, the entry of many new carriers into the local exchange markets suggests that such an entry barrier is not effective. The majority of state regulatory authorities allow competitive entry into their intraLATA toll markets,<sup>64</sup> and CAPs are interconnecting with the local exchange network in many states, including Illinois, New York, and Massachusetts.

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62. AT&T is paying more than \$11 billion for McCaw. MCI Metro is investing two billion dollars in fiber rings and local switching infrastructure in major United States metropolitan markets. *MCI Unveils Long-Range Vision: NetworkMCI, Opens Nation's First Transcontinental Information Superhighway*, PR NEWswire, Jan. 4, 1994, at 2. Sprint acquired Cotel. with local exchange and cellular operations, for \$2.5 billion. *Gambling on Thin Air*, *ECONOMIST*, Aug. 21, 1993, at 49. The cellular industry has made a cumulative investment of \$13.9 billion through December 1993. CELLULAR TELECOMMUNICATIONS INDUS. ASS'N, *THE WIRELESS SOURCEBOOK 9* (1994). Ten CAPs reporting cumulative investment to the FCC had sunk \$94 million by year-end 1993. JONATHAN M. KRAUSHAAR, *FEDERAL COMMUNICATIONS COMM'N, FIBER DEPLOYMENT UPDATE: END OF YEAR 1993* 27 (1994). The combined investment of the cable companies in developing their networks should also be included, although reliable estimates of cumulative industry investment are not readily available.

63. For example, in 1992, the RBOCs reported that a substantial proportion of their fiber-optic capacity was not yet activated. JONATHAN M. KRAUSHAAR, *FEDERAL COMMUNICATIONS COMM'N, FIBER DEPLOYMENT UPDATE: END OF YEAR 1992* 18 (1993).

64. NATIONAL ASS'N OF REGULATORY UTIL. COMM'RS, *THE STATUS OF COMPETITION IN INTRASTATE TELECOMMUNICATIONS* 198-200 (1994).

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If anything, federal and state regulations create incumbent burdens, imposing costs and restrictions on RBOCs that are not placed on the new entrants. An incumbent burden facilitates entry and bypass of the existing telecommunications network even if such bypass would be uneconomic in the absence of the regulations. It is therefore the opposite of a barrier to entry.

The RBOCs face a variety of regulatory restrictions, including common carrier provisions, universal service requirements, and public filing of rates, none of which are generally imposed on new entrants. Other restrictions on RBOCs create lower limits on certain tariffs, which limit their ability to compete with entrants and provide a tariff umbrella for competitors. The regulated rate structure of the RBOCs, with high rates charged to business customers, has created opportunities for selective bypass of the local network. One incumbent burden created by federal regulation is the differential treatment of access charges that AT&T pays to traditional LECs versus those it pays to new access providers. AT&T is required to pass along to its customers savings in access charges paid to traditional LECs, but it need not pass along the savings on access charges paid to new access providers.<sup>65</sup> Therefore, the argument that regulations create entry barriers that confer a statutory monopoly on the RBOCs belies the current state of industry regulation.

The economic inefficiency created by incumbent burdens suggests that the entry of competitors should be accompanied by a lifting of uneven restrictions placed on the RBOCs. By removing these restrictions, regulators will level the playing field, allowing the RBOCs to respond to competitive challenges through pricing, investment and innovation. If the restrictions were lifted, any further entry would reflect a truly competitive market, instead of a market made artificially competitive by regulation.

Indeed, not only do regulatory restrictions create incumbent burdens for the RBOCs, the line-of-business restrictions of the MFJ similarly restrain the RBOCs. The RBOCs are prevented from entering markets that could generate revenues, while competitors in the local exchange are not similarly denied access to these other markets. Since the line-of-business restrictions deny the RBOCs the opportunity to earn revenues that their competitors may earn, they are placed at a disadvantage and denied returns to their technological expertise and market knowledge. This constraint handicaps the RBOCs against actual and potential competitors in the local exchange. In the absence of the line-of-business restrictions, the RBOCs would be able to compete in the same markets as their competitors. The incumbent burdens created by the line-of-business restrictions further demonstrate that regulation is not a barrier to entry

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65. Policy & Rules Concerning Rates for Dominant Carriers, 4 F.C.C.R. 2873, 3005-06 ¶¶ 259-61, 3026-30 ¶¶ 315-21 (1989) (AT&T Price Cap Order).



to the local exchange, but actually creates a competitive disadvantage for the RBOCs.

### III. The Leverage Argument

The third argument used to justify the line-of-business restrictions on the RBOCs is that, if permitted entry into the manufacturing and interLATA markets, the RBOCs could leverage their monopoly position in the local exchange to obtain an unfair competitive advantage over potential competitors in these markets. The leverage argument is based on the antitrust law concept of vertical restraints.<sup>66</sup> This Section defines leverage and examines the application of the leverage argument to the local exchange carriers. As this Article will demonstrate below, the leverage argument is generally flawed in any market. Since a monopolist can always extract monopoly rents in the market it controls, it cannot increase its rents by expansion into a second market. Furthermore, competition in the local exchange market eliminates the possibility of exercising such leverage.

#### A. The Definition of Leverage

Leverage is defined in the antitrust context as the use of monopoly power in one market to extract additional monopoly rents and to secure competitive advantages in a second market.<sup>67</sup> Leverage is designed to exclude competitors from all or part of the second market. The exclusion of competitors from the second market is referred to as foreclosure. Leverage may be exercised in a variety of ways. These include: (1) tying, (2) restricting access to essential facilities, and (3) refusing to deal. The tying and essential facilities examples have often been applied in telecommunications antitrust cases.<sup>68</sup>

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66. Antitrust law has played a crucial role in the organization of the telecommunications industry. "The U.S. telephone industry has been shaped more by antitrust law than by any aspect of federal or state regulation." KELLOGG ET AL., *supra* note 3, at 137. One of the major concerns of antitrust law in telecommunications has been in the area of vertical restraints, particularly exclusionary practices. Vertical restraints denote a company's actions that restrict its buyer or seller relationships with other companies. Exclusionary practices is a general pejorative label covering a host of competitive and contractual activities that are alleged to create barriers to competition and increase a company's market power. Posner defines an exclusionary practice as occurring when a firm "trades a part of its monopoly profits, at least temporarily, for a large market share, by making it unprofitable for other sellers to compete with it." RICHARD A. POSNER, *ANTITRUST LAW: AN ECONOMIC PERSPECTIVE* 28 (1976).

67. The Second Circuit, in *Berkey Photo, Inc. v. Eastman Kodak Co.*, 603 F. 2d 263, 276 (2nd Cir. 1979), stated that "the use of monopoly power attained in one market to gain a competitive advantage in another is a violation of § 2 [of the Sherman Act], even if there has not been an attempt to monopolize the second market." This monopoly leverage argument has been rejected in *Air Passenger Computer Reservation Sys. Antitrust Litig.*, 694 F. Supp. 1443, 1472 (C.D. Cal. 1988).

68. KELLOGG ET AL., *supra* note 3, at 142.

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Tying refers to a situation in which the seller of a good requires the buyer to purchase a second good, thus selling the two as a product bundle.<sup>69</sup> For example, a tying contract offered by an RBOC would require the buyer of its local service to purchase its long-distance service as well. In such a situation, the RBOC would be leveraging its market power in the local service, or tying product's market, over to its long-distance service, or tied product's market. Courts are generally concerned with the restriction of competition in the tied product's market. The reasoning behind the law and court decisions on tying has been subject to significant criticism.<sup>70</sup> As Judge Richard A. Posner has observed, "[o]ne striking deficiency of the traditional, 'leverage' theory of tie-ins, as the courts have applied it, is the failure to require any proof that a monopoly of the tied product is even a remotely plausible consequence of the tie-in."<sup>71</sup> In short, the problem with the tying theory of leverage is that the monopolist has little incentive to tie its products in bundles, since it generally can obtain no additional profits from the tie-in sale, and rarely obtains market power in the market for the tied good.<sup>72</sup>

The firm may obtain benefits from tie-ins if the tied good aids the firm in metering the usage of the tying good for pricing purposes. However, as Posner observes, this does not imply that there is an incentive to exclude competition. In the telecommunications context, the LEC certainly is capable of monitoring usage of its local service without the sale of additional long-distance services or equipment.

An essential facility is a productive input that cannot be duplicated feasibly or economically by others.<sup>73</sup> The concept has been applied rather broadly in antitrust law and has elements of both natural monopoly and barriers to entry. As in the case of natural monopoly technology, the essential facility should not be duplicated, since the market is served at minimum cost with one facility. An essential facility is similar to a barrier to entry in that a competitor cannot feasibly or economically duplicate a facility in a market. Thus, the argument goes, an existing facility will not be duplicated because an entrant would incur irreversible investment costs. Alternatively, it is suggested that the costs of duplicating the facility are higher for an entrant than an incumbent.

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69. In *Times-Picayune Publishing Co. v. United States*, 345 U.S. 594 (1953), the Supreme Court held that tying violates the Sherman Act if the seller has both a monopoly in the tying product and if competitors are foreclosed in the tied product, while the Clayton Act applies if either of these conditions holds.

70. Robert Bork calls this "transfer of market power" theory behind the antitrust law against tying, and the Supreme Court's enforcement of it, "fallacious." ROBERT H. BORK, *THE ANTITRUST PARADOX* 366 (1978). See also Ward S. Bowman, *Tying Arrangements and the Leverage Problem*, 67 YALE L.J. 19 (1957). George Stigler criticizes the application of the law on tying in GEORGE J. STIGLER, *United States v. Loew's, Inc.: A Note on Block Booking*, 1963 SUP. CT. REV. 152.

71. POSNER, *supra* note 66, at 172.

72. *Id.* at 173.

73. See *Otter Tail Power Co. v. United States*, 410 U.S. 366 (1973); *United States v. Terminal R.R. Ass'n*, 224 U.S. 383 (1912).

The essential facility doctrine goes beyond the natural monopoly and barriers to entry ideas since it incorporates vertical elements. The owner of the essential facility not only has monopoly power in one market but is presumed to deny equitable access to competing firms in another market. In *United States v. Terminal Railroad Association*, the Court found a railroad switching junction to be an essential facility.<sup>74</sup> In *Otter Tail Power Co. v. United States*, the Court found that the electric power transmission lines of the utility were an essential facility.<sup>75</sup> The standard antitrust remedy for the existence of an essential facility is to mandate equal access to that facility,<sup>76</sup> which is what the MFJ mandated for long-distance carriers.

#### B. *Leverage and the Local Exchange*

In 1982, Judge Greene stated with regard to interLATA services: "The complexity of the telecommunications network would make it possible for [the RBOCs] to establish and maintain an access plan that would provide to their own interexchange service more favorable treatment than that granted to other carriers."<sup>77</sup> Similarly, with respect to the manufacture of telecommunications equipment, Judge Greene stated that "non-affiliated manufacturers would be disadvantaged in the sale of such equipment and the development of a competitive market would be frustrated."<sup>78</sup>

The leverage argument has thus been applied to the RBOCs in two ways. First, it has been argued that the RBOC could use its monopoly to sell its own long-distance services or telecommunications equipment to itself or to its existing customers. Second, the argument asserts, the RBOC could use its control over its essential facilities, or local bottleneck, to extract monopoly rents by rationing its customers' access to equipment or long distance services. Judge Greene stated that "the local facilities controlled by Bell are 'essential facilities'" for long-distance carriers.<sup>79</sup> As this Article will explain below, these two arguments are inconsistent with technological changes and industry developments that have occurred since the MFJ.

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74. 224 U.S. 383 (1912).

75. 410 U.S. at 366.

76. *KELLOGG ET AL.*, *supra* note 3, at 140.

77. *United States v. American Tel. & Tel. Co.*, 552 F. Supp. 131 (D.D.C. 1982), *aff'd sub nom. Maryland v. United States*, 460 U.S. 1001 (1983).

78. *Id.* at 190. With regard to information services, Judge Greene stated: "The Operating Companies would . . . have the same incentives and the same ability to discriminate against competing information service providers that they would have with respect to competing interexchange carriers." *Id.* at 189.

79. *United States v. American Tel. & Tel. Co.*, 524 F. Supp. 1336, 1346 (D.D.C. 1981).

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### C. *The Erosion of the Local Exchange Monopoly Eliminates the Possibility Of Leverage and Self-Dealing*

The argument that an RBOC will use its monopoly in the local exchange to sell long-distance services and telecommunications equipment to its own customers in a manner that denies access to other firms is inconsistent with current industry conditions. As this Article has already explained, the view that an RBOC has a monopoly over the local exchange by virtue of natural monopoly technology is no longer valid. Moreover, the assertion that the LEC has a monopoly resulting from barriers to entry due to sunk costs or regulation is also based on improper analysis. In addition, the presence of competition and the potential for substantial additional entry into the local exchange invalidate the notion of the existence of a monopoly in the local loop.

As Judge Greene noted with regard to concerns over AT&T's market share in the market for interexchange services, low entry barriers and the "trend of increasing competition" imply a lack of market power.<sup>80</sup> The same argument can now be applied to the RBOCs, for the technology of the local exchange exhibits substantially reduced entry barriers, and there is a clear trend toward increased competition. The absence of either monopoly or the potential for monopoly in the local exchange therefore implies that the "pivot" required to support leverage does not exist. The monopoly-leverage argument consequently fails.

In the case of interLATA services, customers have a choice of interexchange carriers, including AT&T, MCI, and Sprint. Moreover, customers have alternative means of accessing interexchange carriers through wireless or fiber-optic networks. Therefore, many customers can already access long-distance providers without going through the local exchange. These alternatives will continue to expand as the interexchange carriers themselves vertically integrate into the provision of local access, including AT&T through its acquisition of McCaw's cellular network and MCI through its own construction of metropolitan fiber rings. Furthermore, under equal-access regulations, the interLATA services of the RBOCs would compete on an equal footing with interexchange carriers that currently reach customers through the local exchange. Thus, the line-of-business restriction on the provision of interLATA services by RBOCs ignores the alternative forms of access that have become available to consumers since the MFJ took effect.

We have seen that an RBOC could not prevent its customers from accessing other long-distance carriers if it were allowed to enter the interLATA market. As this Article will show below, the argument that an RBOC could

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80. *United States v. American Tel. & Tel. Co.*, 552 F. Supp. 131 (D.D.C. 1982), *aff'd sub nom. Maryland v. United States*, 460 U.S. 1001 (1983).

leverage its monopoly position to control its customers' access to telecommunications equipment is also inconsistent with current industry conditions. For purposes here, equipment can be classified into customer premises equipment and telephone company switching and transmission equipment. With respect to either broad category, there is little or no basis for the monopoly-leverage argument. Although AT&T exercised control over customer premises equipment and telephone company purchases of switching and transmission equipment prior to the breakup, since the MFJ, this type of control has no longer been retained by anyone.

For equipment purchased by customers for use on their own premises, such as handsets, answering machines, fax machines, computers, inside wiring, and PBX, there is absolutely no basis for concluding that an RBOC can exercise any control at all on the choices of supplier. Customers buy such equipment in the marketplace. An RBOC has no more control over these purchases than does a broadcast television network over the brand of television set purchased by its viewers.

For telephone company purchases of switching and transmission equipment, an RBOC could choose to purchase equipment that it manufactured if the line-of-business restrictions were removed. For two reasons, this is not a cause for concern. First, since many of its customers have the choice of alternative telecommunications providers, the RBOCs' ability to pass along the costs of equipment purchases is severely limited. This, in turn, significantly reduces or eliminates any potential returns to the RBOC's payment of high prices to itself for equipment. Second, since the RBOCs are subject to price-cap or similar incentive regulations at both the federal and state level and face competition for portions of their markets, they would not have an incentive to purchase any particular type of equipment from themselves unless they were the lowest-cost provider. Moreover, the tremendous diversity of switching and transmission equipment, particularly equipment developed since the time of the MFJ, suggests that any one RBOC would manufacture only a subset of this equipment. These factors suggest that self-dealing in equipment should not be a concern.

#### *D. The RBOCs' Networks are No Longer Essential Facilities*

The essential facility argument outlined above is used to justify the line-of-business restrictions on the RBOCs by implying that they will use their control of the local exchange to deny their customers access to other long-distance services, to require customers to purchase the RBOCs' own equipment, or to require customers to purchase the RBOCs' own information services.<sup>81</sup> The

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81. In 1987, Judge Greene identified the local switches and circuits as an "essential facility" and

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argument that the LECs will be able to use their control over the local exchange is inconsistent with the regulatory and industry developments in the local exchange that this Article has already discussed. These developments imply that the local loop is no longer an essential facility, just as they imply that the RBOCs no longer qualify as natural monopolists or benefit from barriers to entry. The essential facilities argument for the line-of-business restrictions is thus no longer valid for three reasons.

First, the local loop is not an essential facility because there exist many alternatives to the existing local exchange network provided by the regulated local exchange carriers. The multiple technologies currently available for telecommunications transmission, including coaxial cable, fiber optics, and wireless technologies such as cellular and microwave, are sufficient to establish the feasibility of constructing alternative transmission facilities to supplement, compete with, or even replace portions of the local exchange network provided by the RBOCs. The essential facilities argument implies that the RBOCs metaphorically own and control a bridge that crosses a river at the only feasible crossing point within some geographic area. To extend this analogy, the availability of multiple transmission technologies is sufficient to establish that there are many other ways to cross the river.

Second, the essential facilities argument is no longer valid because entry into the local loop has already occurred. The economic viability of competitors that are supplying transmission services using coaxial cable, fiber optics, and wireless systems establishes that alternative facilities can be constructed economically. Thus, it is not only technically feasible to construct alternative facilities, but also economically feasible. For example, CAPs already offer access to long-distance carriers on facilities that bypass the local loop. Although the CAPs' fiber-optic systems are small in size compared to those of the RBOCs, their entry has demonstrated the economic feasibility of bypassing portions of the local loop. Similarly, the rapid growth of the cellular industry demonstrates the economic feasibility of other means of access. These developments have all occurred since the MFJ took effect in 1984. It would be myopic to point to the absolute size of an RBOC's local-loop plant as evidence that it is an essential facility.

Even though the local loop is no longer an essential facility, regulations still exist guaranteeing access to the local exchange for long-distance carriers. The existence of these provisions also serves to invalidate the essential facilities argument with respect to interLATA services: even if the local exchange were to involve facilities that could not be duplicated, the equal-access provisions

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concluded that "the Regional Companies have retained control of the local bottlenecks." *United States v. Western Elec. Co.*, 673 F. Supp. 525, 540 (D.D.C. 1987), *aff'd*, 894 F.2d 1387 (D.C. Cir. 1990).

already eliminate any advantage that an RBOC could otherwise gain by offering long-distance services.

In short, the essential facilities argument fails to apply because the local exchange is no longer an essential facility for access to the telecommunications network. An RBOC cannot leverage an essential facility that it does not possess.

#### IV. The Cross-Subsidization Argument

The fourth argument in favor of the line-of-business restrictions puts forward the notion that an RBOC will use profits from the local exchange to engage in cross-subsidization of other lines of business. The argument suggests that the RBOCs would gain an unfair competitive advantage. This Section defines cross-subsidization and considers the application of the cross-subsidization argument to the local exchange carriers. It shows that the RBOCs do not have an incentive to cross-subsidize long-distance service or equipment manufacturing and that growing competition reduces the profits from the local exchange that could be used for cross-subsidies.

##### A. *The Definition of Cross-Subsidization*

Cross-subsidization occurs when a company supplying more than one product or service uses the revenues from product A to recover a portion of the additional costs of producing product B. This practice creates economic inefficiencies since the customers of product A would be better off if the products were produced and priced separately.<sup>82</sup> Moreover, the customers of product B are given incorrect price signals about the incremental costs of producing product B.

There are formal tests for cross-subsidization. A regulated firm's rate structure can be said to be free of cross-subsidies if and only if the prices satisfy the stand-alone cost test.<sup>83</sup> The stand-alone cost test requires that the revenues generated from either of two services not exceed the stand-alone cost of providing that service. If the revenues from one service exceed its stand-alone cost, then that service is providing a cross-subsidy to the other service.<sup>84</sup> Clearly, the customers of the service that is providing the cross-

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82. Such separation, however, would forego economies from joint production.

83. The stand-alone cost test is a widely applied criterion. See BAUMOL & SIDAK, *supra* note 48, at 81; BAUMOL ET AL., *supra* note 18, at 352-353.

84. The definition of the stand-alone cost test is given in terms of two services. In the case of more than two services, the test requires that no group of services subsidizes any other group of services. The regulated rate structure refers to a break-even rate structure.

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subsidy would be better off if that service could be obtained independently of the other service.

A firm's rate structure also is free of cross-subsidies if and only if the prices satisfy the incremental cost test, which is equivalent to the stand-alone cost test for a regulated rate structure.<sup>85</sup> Applying the incremental cost test, revenues generated by each service cover the incremental cost of providing that service.<sup>86</sup> The rationale for the incremental cost test is the requirement that each service must generate revenues that at least cover the additional cost of producing that service. If not, the other service is providing a cross-subsidy, and the customers of the other service would be better off receiving their service independently, at its stand-alone cost.

If the firm's rates are not necessarily break-even rates but instead generate revenues that are greater than or equal to costs, then the incremental cost test should be applied to determine cross-subsidization, regardless of whether regulation exists. If the firm operates in both regulated and unregulated markets, the revenues in the unregulated market should cover the firm's incremental costs of serving the unregulated market, in order to be free of cross-subsidies. This guarantees that serving the unregulated market increases, or at least does not reduce, the firm's profit.

### B. Cross-Subsidization and the Local Exchange

In 1982, Judge Greene ruled that the RBOCs would employ cross-subsidization to foreclose competition in interexchange services, information services, and the manufacture of equipment. The RBOCs, he wrote, would be able "to subsidize their interexchange prices with profits earned from their monopoly services" and "to subsidize the prices of their [information] services with revenues from the local exchange monopoly." They "would have an incentive to subsidize the prices of their equipment with the revenues from their monopoly services."<sup>87</sup>

The RBOCs have lost any opportunity to cross-subsidize. The profits from the local exchange service that could be used to provide cross-subsidies to interLATA services or equipment manufacturing are significantly reduced by existing and potential competition in the local loop. Judge Greene observed

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85. The incremental cost test is a widely applied criterion that has been used for over a century. For further discussion and a formal definition, see BAUMOL & SIDAK, *supra* note 48, at 57, 81-83; WILLIAM J. BAUMOL, *SUPERFAIRNESS: APPLICATIONS AND THEORY* 113-20 (1986).

86. The incremental cost test is defined here for only two services. In the case of more than two services, the revenues generated by each group of services must cover the incremental cost of providing that group of services.

87. *United States v. American Tel. & Tel. Co.*, 552 F. Supp. 131, 188-190 (D.D.C. 1982), *aff'd sub nom. Maryland v. United States*, 460 U.S. 1001 (1983). As Judge Greene observed, it must be shown that the RBOCs have both "the incentive and opportunity to act anticompetitively." *Id.* at 187.



that "AT&T's opportunity for cross-subsidization will become increasingly curtailed as interexchange competition increases."<sup>88</sup> This same observation now applies to the situation of the RBOCs in the local exchange: their opportunity for cross-subsidization has been curtailed by competition in the local loop. Moreover, this Article explains below that the belief that the RBOCs have the incentive to predatorily cross-subsidize is based on specious economic reasoning.

C. *The RBOCs Do Not Have an Incentive to Subsidize Activities Outside the Local Exchange*

The cross-subsidy argument relies on the notion that the RBOC has an incentive to subsidize its entry into other lines of business, particularly those from which it is now barred by the MFJ's restrictions. In other words, for the cross-subsidy argument to apply, the RBOC would have to earn incremental revenues that are less than the incremental cost of providing other services, thus incurring an economic loss on these additional lines of business. Such an action would be inconsistent with profit maximization and would not be undertaken by an RBOC because it would be inconsistent with the interests of its shareholders. This is not to say that other lines of business would not incur the normal initial losses that occur as new businesses are established. It is normal for investors to accept losses in the initial phases of establishing a new line of business. Moreover, a line of business may incur losses as a consequence of the normal market risks faced by any business. It is, however, inconsistent with business objectives and economic analysis to expect that an RBOC would enter a market with the intention of incurring a loss, even if that loss were subsidized from earnings in another part of its business. The interests of the RBOC's owners would be to invest those earnings in a venture expected to be profitable. Therefore, the notion that an RBOC would obtain a competitive advantage through cross-subsidies is incorrect and at odds with the profit-making objectives of shareholder-owned companies. A business will not cross-subsidize a new business venture that it expects to be unprofitable.

Another assumption of the cross-subsidy argument is that an RBOC would use cross-subsidies to temporarily obtain a competitive advantage over its rivals in other lines of business, with the objective of eliminating competitors. This view implies that the RBOC would engage in behavior resembling predatory pricing, which is said to occur when firms incur a loss with the intention of eliminating rivals and later raising prices to recoup earnings after the rivals have exited the market.<sup>89</sup> This argument has been discredited, as both econo-

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88. *Id.* at 173.

89. *See, e.g.,* BAUMOL & SIDAK, *supra* note 48, at 63; SPULBER, *supra* note 4, at 475-76.